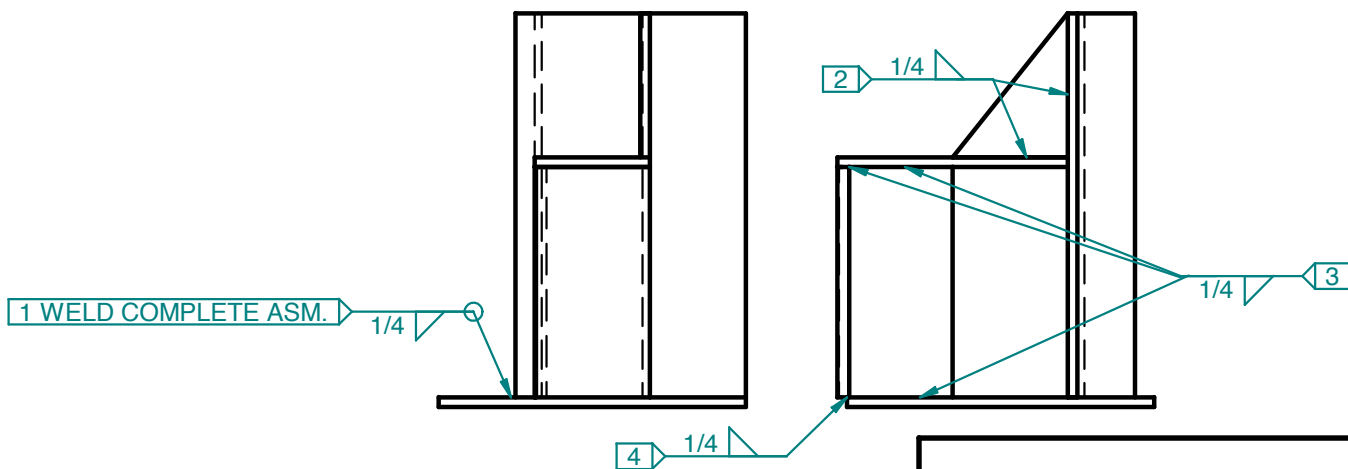
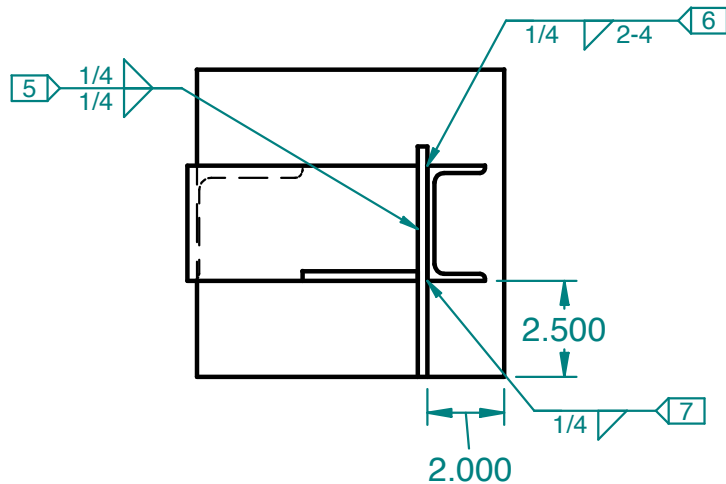
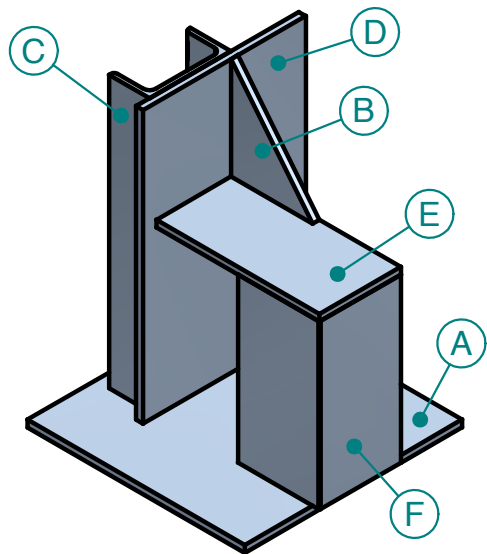


SkillsUSA

2015 Contest Projects

Welding

Click the “Print this Section” button above to automatically print the specifications for this contest. Make sure your printer is turned on before pressing the button.



ID	Qty	Title
A	1	0.25 X 8 X 8 Steel Plate
B	1	1/4 x 3 x 3.75 Plate
C	1	3 x 5.0# x 10 Steel Channel
D	1	0.25 x 6 x 10 Steel Plate
E	1	1/4 x 3 x 6 Plate
F	1	5/16 x 3 x 3 x 6 Steel Angle

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 108
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL



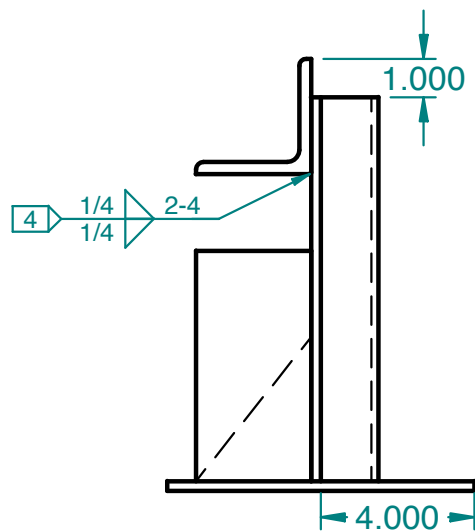
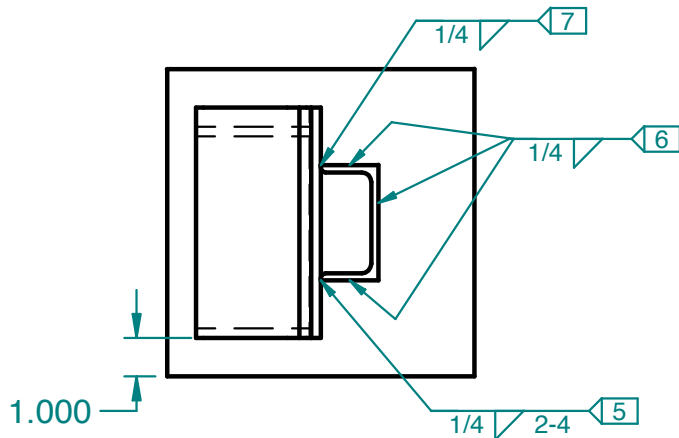
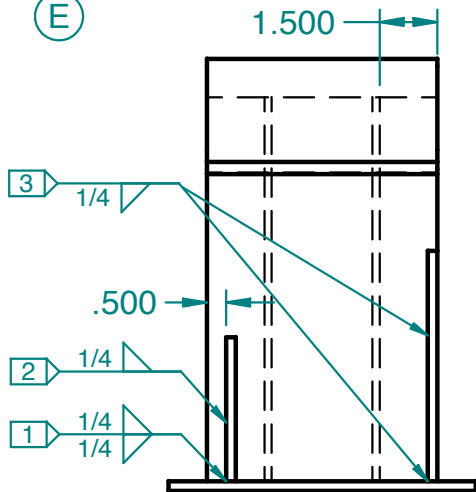
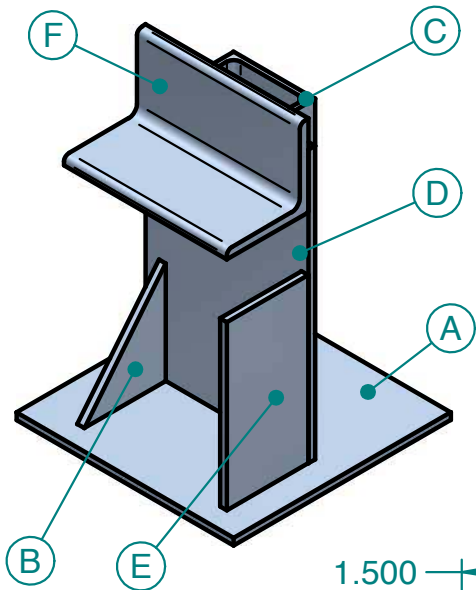
UNLESS OTHERWISE
SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE **FCAW College**

SIZE **A**

SHEET 1 OF 1



ID	Qty	Title
A	1	0.25 X 8 X 8 Steel Plate
B	1	1/4 x 3 x 3.75 Plate
C	1	3 x 5.0# x 10 Steel Channel
D	1	0.25 x 6 x 10 Steel Plate
E	1	1/4 x 3 x 6 Plate
F	1	5/16 x 3 x 3 x 6 Steel Angle

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 108
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL

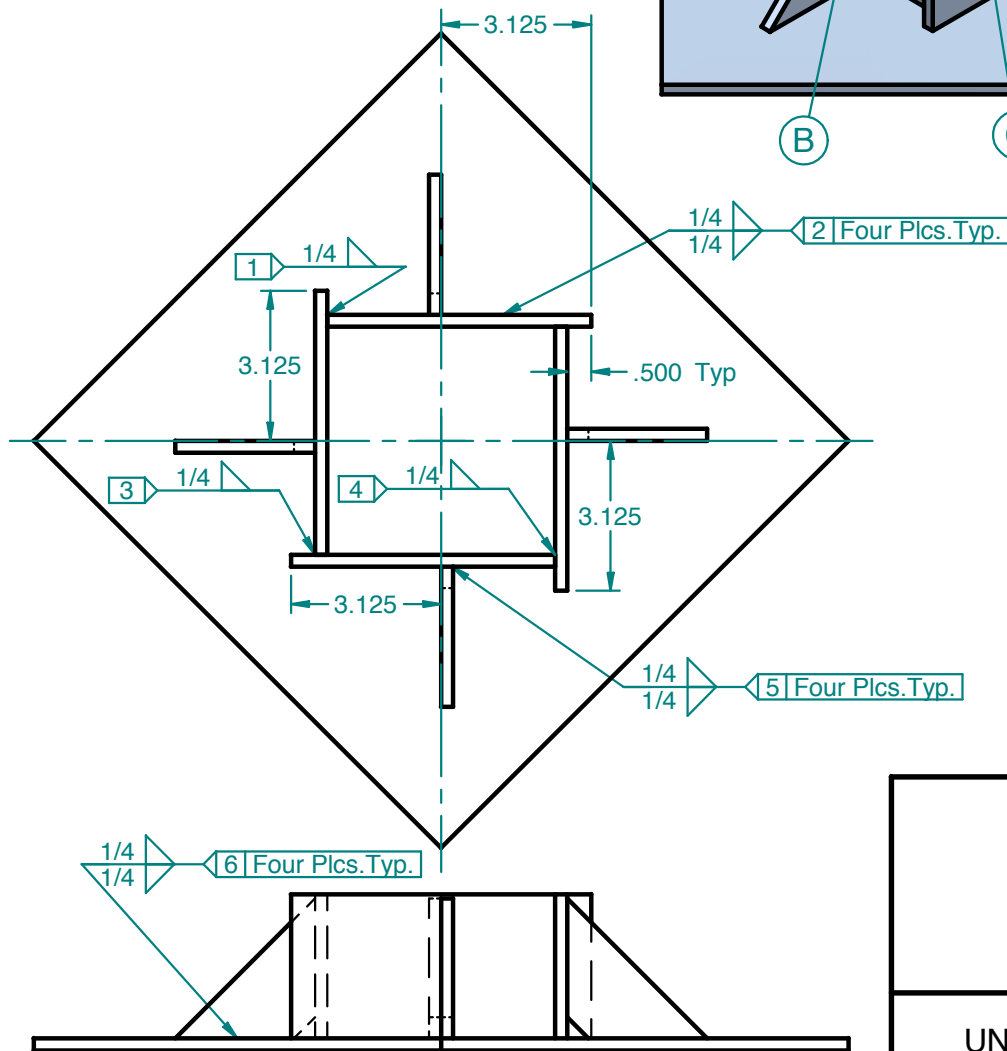
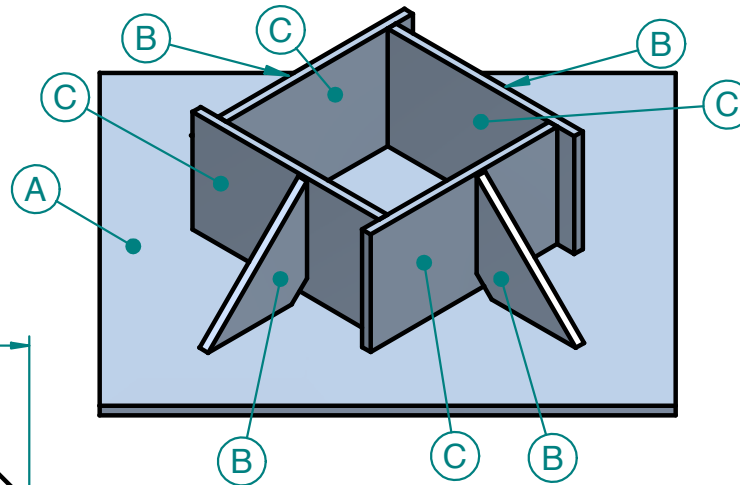


UNLESS OTHERWISE
SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE
FCAW H/S

SIZE A		
		SHEET 1 OF 1



ID	Qty	Title
A	1	.25 x 12 x 12 Plate
B	4	.25 x 2.475 x 4.125 Plate
C	4	.25 x 3 x 5.5 Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD #2 & #6 IN ACCORDANCE WITH WPS# 110. ALL OTHER WELDS USE WPS# 104.

2. TACK COMPLETE ASSEMBLY IN ANY POSITION

3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

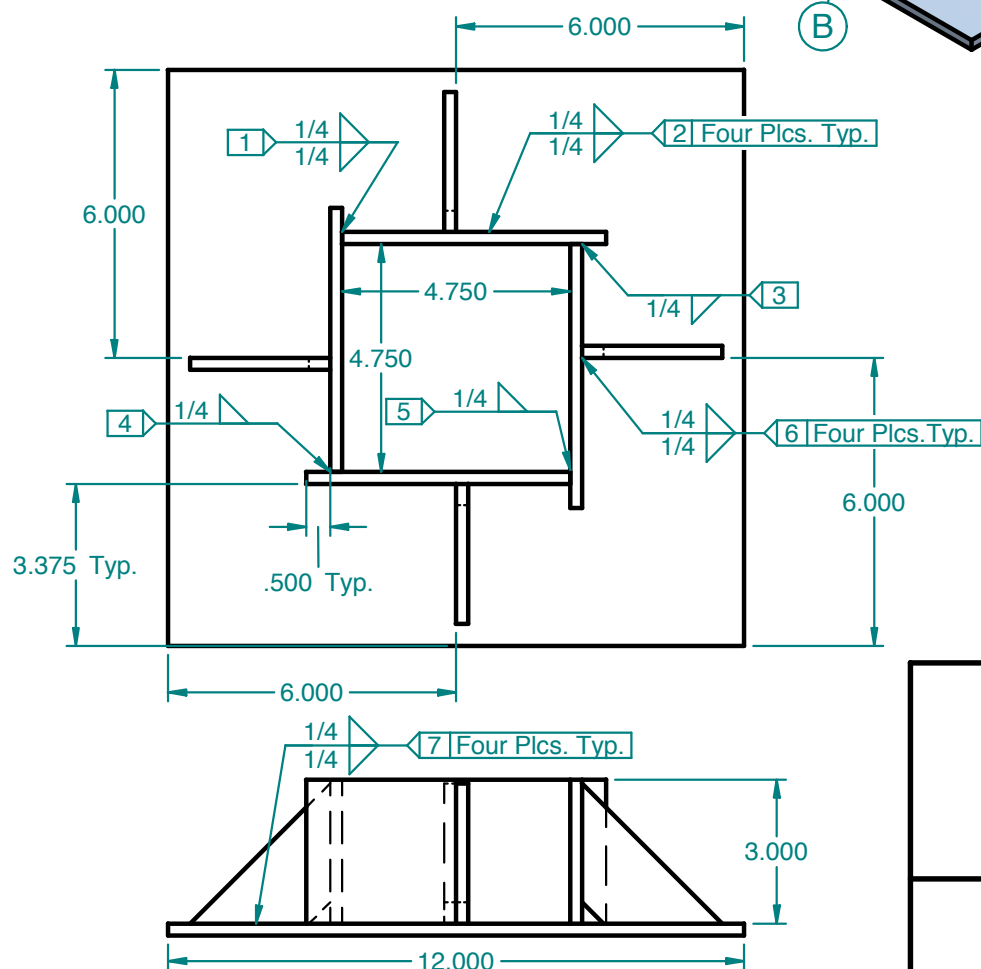
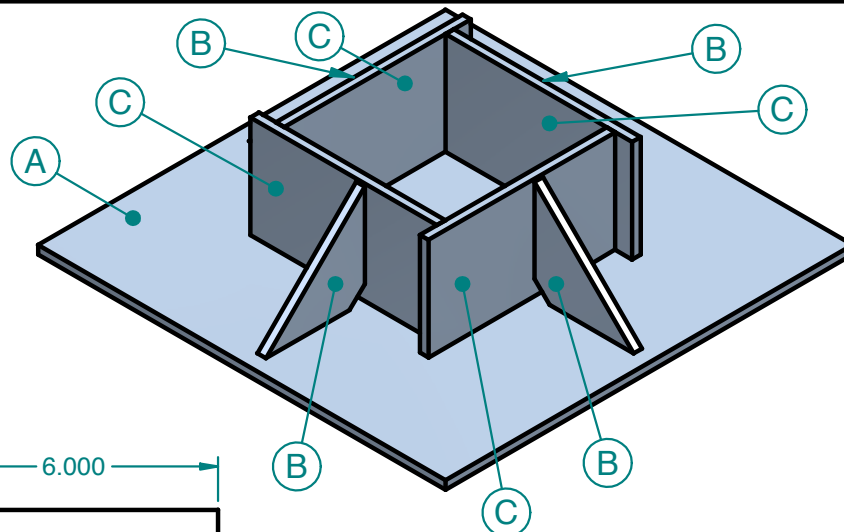
2015 National SkillsUSA
Welding Contest

TITLE

GMAW College

SIZE
A

SHEET 1 OF 1



ID	Qty	Title
A	1	.25 x 12 x 12 Plate
B	4	.25 x 2.475 x 4.125 Plate
C	4	.25 x 3 x 5.5 Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD #2 & #7 IN ACCORDANCE WITH WPS# 110. ALL OTHER WELDS USE WPS# 104.

2. TACK COMPLETE ASSEMBLY IN ANY POSITION

3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE

4. ALL VERTICAL WELDS TO BE UPHILL



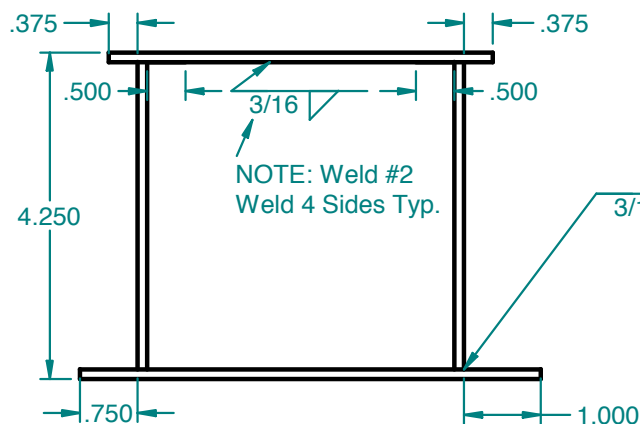
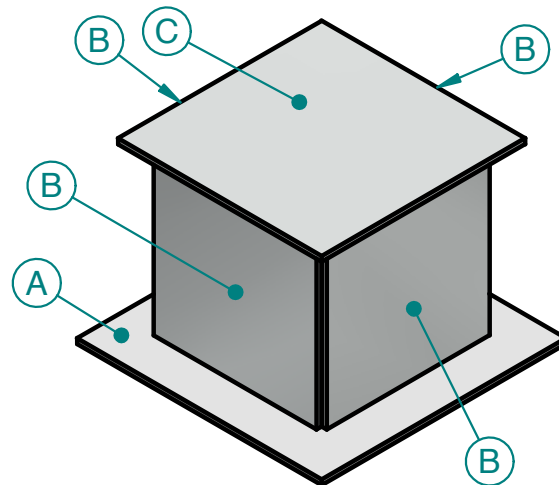
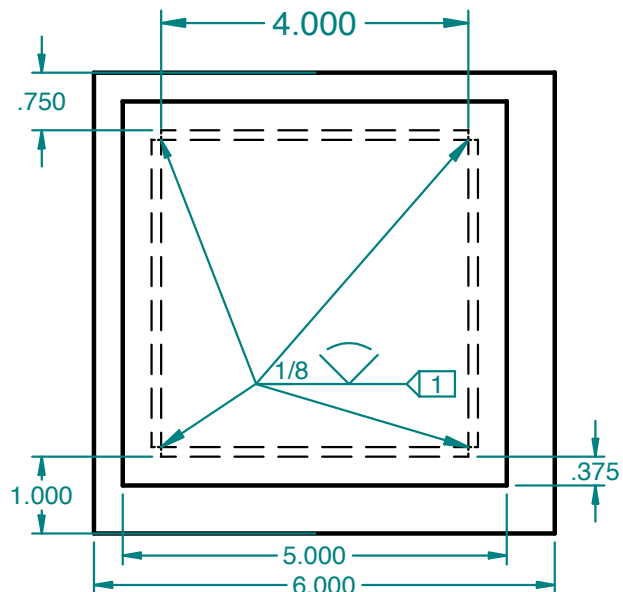
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE
GMAW HIGH SCHOOL

SIZE
A

SHEET 1 OF 1



3/16  3 Four Plcs Typ. Wrap Corners

ID	Qty	Title
C	1	0.125 x 5 x 5 Aluminum Sheet
B	4	0.125 x 4 x 4 Aluminum Sheet
A	1	0.125 x 6 x 6 Aluminum Sheet

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 103
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL
5. NO POST CLEANING

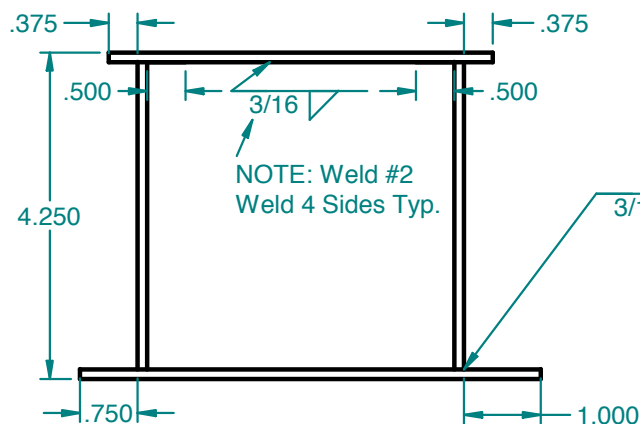
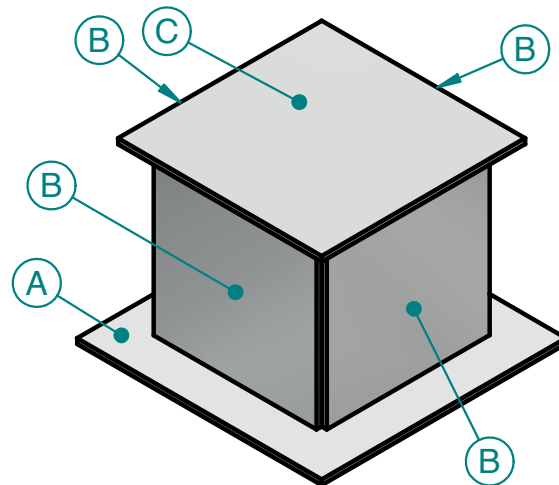
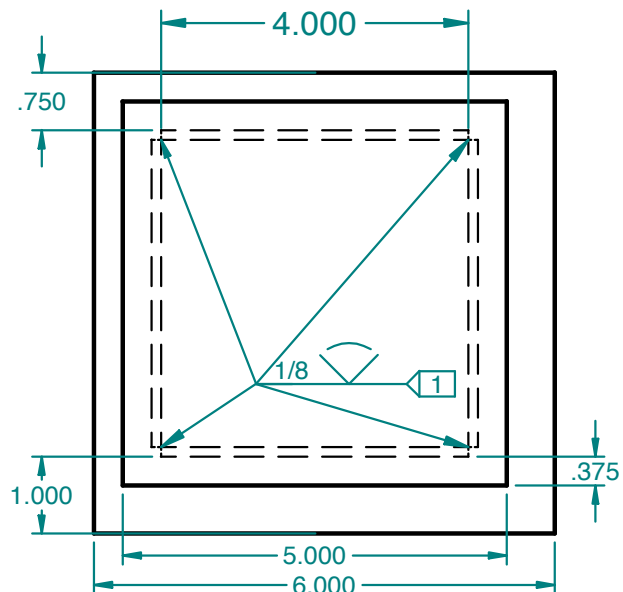


UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE GTAW College

SIZE A		
		SHEET 1 OF 1



NOTE: Weld #2
Weld 4 Sides Typ.

3/16 3 Four Plcs Typ. Wrap Corners

ID	Qty	Title
C	1	0.125 x 5 x 5 Aluminum Sheet
B	4	0.125 x 4 x 4 Aluminum Sheet
A	1	0.125 x 6 x 6 Aluminum Sheet

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 103
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL
5. NO POST CLEANING



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE
GTAW H/S

SIZE
A

SHEET 1 OF 1

Welding Competition

Welding Contestants & Advisors:

Welcome to the National SkillsUSA Welding Championship Contest. By winning a Gold Medal at your state welding contest, you have earned a place to compete with other welding students throughout the nation in the following practical skill areas: the Gas Metal Arc Welding process, the Gas Tungsten Arc Welding process, the Shielded Metal Arc Welding process, the Flux Cored Arc Welding process, and the Oxy Acetylene Cutting process. In addition to these practical skills, you are saying you have prepared yourself academically in the areas of welding fundamentals, welding math, visual weld inspection, geometrical layout, blueprint reading, and welding symbols. This contest has been designed to test your abilities in each of those areas and to select the best 'all around' student welder at the National SkillsUSA Championships.

Contest Time

Each day the contest is scheduled to start promptly at 8:30 AM. **Contestants are to report to the contest area at 8:00 A.M.**

Post-Secondary Contestants will compete on WEDNESDAY, JUNE 24TH

High School Contestants will compete on THURSDAY, JUNE 25TH

The welding contest should conclude around 4 PM. At that time all students will be asked to gather their personal property and leave the contest area. Although the offer to help is appreciated, there will be no need for contestants to stay and help tear down the contest area.

DO NOT remove your projects until Friday AM after the debrief.

Hands-on contest areas

In each practical contest area, you will receive a contest drawing, coupons, welding supplies, access to welding/cutting equipment, and a safe place to do your work. Please be advised that the welding power sources, torches, and other welding equipment, provided for your use at the contest, are on loan to this contest and are not to be abused in any way. **Intentional abuse resulting in damage to the welding equipment or any other contest infrastructure will be cause for immediate dismissal from this contest.**

Interview Area

For the Interview area each contestant should have been notified through SkillsUSA to bring your prepared resume. You will be graded on your resume, and communication skills.

START TIME		
7:30-8:00	Competitors be at the Contest Area OUTSIDE the Welding Contest Area Along the South Wall. Line up Numerically with the Lowest Number in the Southeast corner of the building.	
8:00	Contestants Ushered into Contest Area	
8:00-8:30	Safety inspection and additional Instructions for the specific contest area, and Stand By for Contest Start	
8:30-9:30	Round 1 Start/Finish	ROUND #1
9:30-9:45	Transition to Round 2	
9:45-10:45	Round 2 Start/Finish	ROUND #2
10:45-11:00	MOVE TO NEW AREA	
11:00-12:00	Round 3 Start/Finish	ROUND #3
12:00-12:30	LUNCH / Transition to Round 4	LUNCH
12:30-1:30	Round 4 Start/Finish	ROUND #4
1:30-1:45	MOVE TO NEW AREA	
1:45-2:45	Round 5 Start/Finish	ROUND #5
2:45 - 3:00	Transition to Round 6	
3:00-4:00	Round 6 Start/Finish	ROUND #6
4:00	Contest Over! Contestants can leave when they are finished and have their project turned in for evaluation.	

What Happens After Roll Call

Once everyone has been identified, you will only be known by your id number assigned from SkillsUSA. So please place your name tag so that it shows your contestant number. On your Contest Day, place your number on the back of your welding jacket and keep that number visible for the judges. You will be assigned to a contest area as roll call is completed on the floor. Each contestant group will contain sixteen contestants. Once students have successfully been assigned to a contestant group, they will be escorted to their assigned contest area for further briefing and a welding apparel safety inspection. Contestants must wear the official SkillsUSA uniform. Failure to do so will result in a clothing penalty.

After arrival at the initial process station and subsequent apparel safety inspection, the contestants can get prepared for the contest start. For those contestants starting in one of the welding or cutting processes, this would be a good time to put on your personal protection gear needed for those processes. You will be asked to stand-by and wait to enter your process station until the buzzer sounds indicating the beginning of the contest. Inside the welding/cutting process station, all the materials needed for you to complete your task will be provided. Do not enter the process station or booth until told to do so.

Welding Competition

Once The Contest Begins

Be forewarned that any coincidental glimpse of a welded coupon may not provide accurate advance information to contestants if it is not welded correctly. Just be confident of your own abilities and concentrate on doing your own work. Looking at someone else's work may not be a good idea and can throw you off.

Each contest station is time limited to sixty minutes. At the end of each contest period, the students will be instructed to stop immediately. Depending on what Contest area you are, you will either pack up your tools, and proceed to the next process station or remain outside of your booth until instructed to begin the next round. There is fifteen minutes to transition from one station to another. After the transition period, the next contest station will begin, whether or not every contestant is ready. Contestants will, once again, stand outside the process station until instructed to enter.

Do's and Dont's

DO relax and have some fun.

DO NOTIFY a contest area judge or contest volunteer if you need to leave to use the rest room and follow the do not's below and make it quick.

DO NOT WELD ON THE TABLE SURFACES

DO NOT plan to use 'shared' tools from a fellow student.

DO NOT 'Give up' and walk away from the contest without consulting the contest chairman.

DO NOT talk to anyone outside the contest area.

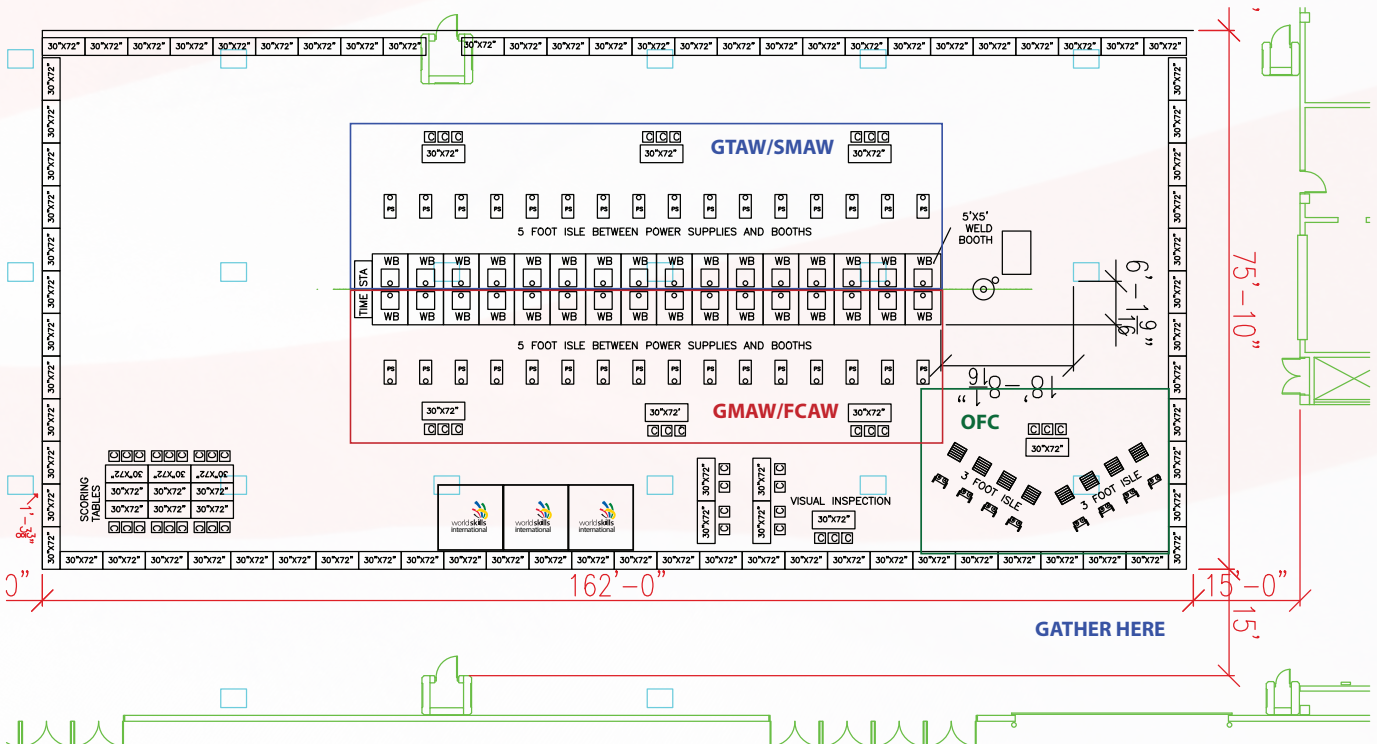
DO NOT talk to your weld advisor.

DO NOT abuse the equipment.

DO NOT Enter the weld booth or begin work until instructed.

Even casual conversation may be perceived as information sharing and may result in disqualification from the contest. For those occasions when the student is required to sit and wait, some casual conversation may naturally occur and may not warrant such disqualification. Plus, it is essentially every one for them selves to see who can win.

WELDING



Welding Competition

What To Do If You Have A Problem

IMMEDIATELY, alert one of the process monitors so that we can troubleshoot your problem. If there is a problem with the items we provided, the competitor will be allowed make up time. However, no make up time will be allowed if the student stops and asks for help with contest specifics such as drawing details or weld symbol interpretation or basic welding knowledge that is being tested, including machine set up and weld settings.

Taking Home Your Project

On Friday morning **AFTER** the Debriefing, after clearance from the Contest Chair, those contestants that wish to claim their welded coupons are welcome to do so.

Any unclaimed contestant coupons left within 1 hour of the end of the contest debriefing will be considered forfeited and will be removed from the contest area. You can not take any other weldments than your own. Taking completed projects from another school or competitor will result in immediate disqualification of the student that removed the competitor's project. The only exception made will be where the advisor has asked via e-mail or in writing to the contest chairman to have another advisor take his student's projects back for them because of travel logistics.

Important Notes:

CONTESTANTS: The welding contestants will bring their tools and proper welding attire & safety gear **INCLUDING WORK BOOTS**.

DO NOT ENTER THE CONTEST AREAS DURING SET UP DAY THERE ARE NO GUARANTEES THAT TOOLS WILL BE SECURE IF YOU DROP THEM OFF TO THE SITE EARLY.

ABSOLUTELY NO CELL PHONES ARE ALLOWED WITHIN THE CONTEST AREA. Keep all cell phones turned off, stored in a safe place out of sight during the contest, Also, no headphones or personal music devices are allowed.

LUNCH WILL BE PROVIDED. Should a student require something to snack on between breakfast and lunch they must bring their own snack. Keep in mind that there will be little opportunity to have a snack during the contest but a quick energy bar may be a good thing to have handy if hunger strikes.

Scoring

You will be judged on all aspects related to your project. Be aware that you may be the best welder in your state, and still not win the contest if you do not follow the specific instructions. The scoring has specific yes/no questions to evaluate the welds. The questions are designed around AWS D1.1 Structural Welding Code - Steel, Visual Inspection Criteria.

These questions shown below are only samples of the type of evaluation being performed. Each question is assigned points and these questions as well as the amount of points assigned may change slightly over the years. The key however is that the evaluation will be consistent and objective and this is a sample of the logic that each evaluation criteria will use to determine points awarded.

Sample Evaluation Questions

Sample of questions used to evaluate and score welds. Everything is Yes or No it meets criteria or it does not just like when welding to a code.

Is the amperage within range specified on the WPS?

Is the voltage within range specified on the WPS?

Is the welding being performed in the correct position?

Is the wire feed speed within range specified on the WPS?

Was there a safety infraction? Yes/No Explain

Is the Project Assembled In Accordance to the Drawing?

Crater Cross Section. All craters should be filled to provide the specified weld size, except for the end of intermittent fillet welds outside of their effective length. Are the weld craters completely filled to the weld size?

Porosity. No visible porosity is acceptable, Does the Weld Meet this Requirement?

Undercut. Not to exceed 1/32 in depth for a total accumulated length of 1/2 in. Does the weld meet this requirement?

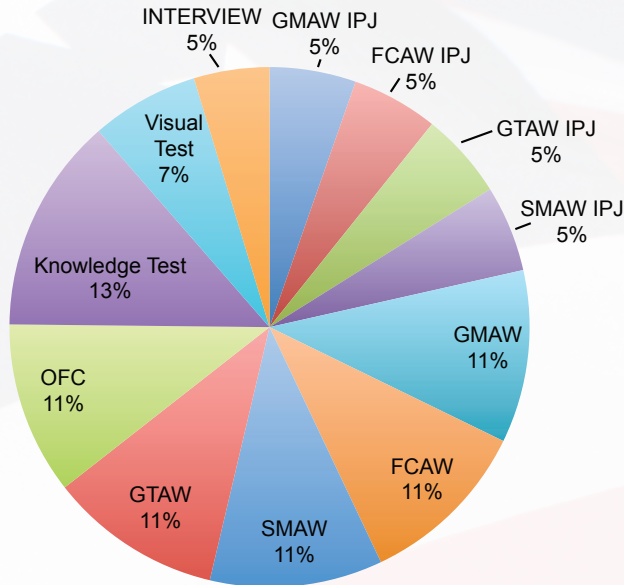
Undersized Welds. Weld Size not to be larger by anything greater than 1/16 in. anywhere along the weld length and no smaller than specified on the drawing. Does the weld size meet this requirement?

Weld/Base metal Fusion. Complete fusion shall exist between base and weld metal. Does the weld display complete fusion with no cold lap?

There shall be no Arc Marks outside the weld area. Does the weld meet this requirement?

Does Cut meet the ID and OD of the Go / no-go gauge?

Welding Competition



All percentages are based on a 1000 Point Scale.

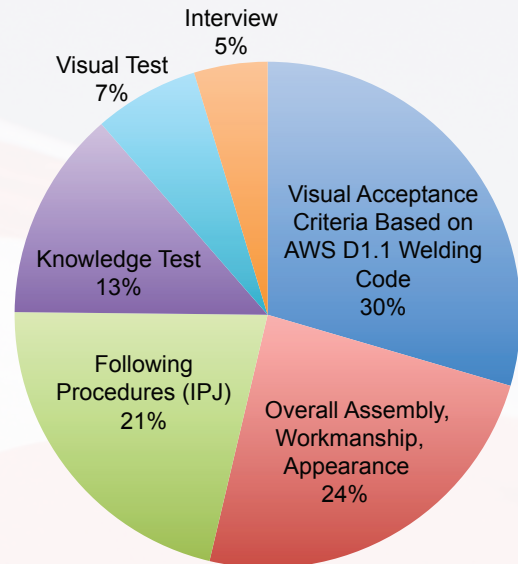
Figure 1 – Breakdown of Contest Areas
(These are the points that you will see from SkillsUSA)

In the event of a tie, the first area that identifies a score separation will separate places. Those areas will be looked at in this order until the first separation occurs and that will determine place:

1. Safety Violations
2. Clothing Penalty
3. Resume Penalty
4. Knowledge Test
5. Visual Test
6. Interview
7. GMAW
8. GTAW
9. FCAW
10. SMAW
11. OFC
12. GMAW IPJ
13. GTAW IPJ
14. FCAW IPJ
15. SMAW IPJ

The last resort will be to line up the tied projects, and at the discretion of the Contest Chairman, 5 individual experts will be selected to vote the ranking based on their professional opinion. It is only at this point that subjectivity will select a winner.

The Results are broken down by contest area and you can see on the table and pie charts above how those results fit with the areas evaluated.



Note: All percentages shown are generated by Excel and rounding occurred in some instances.

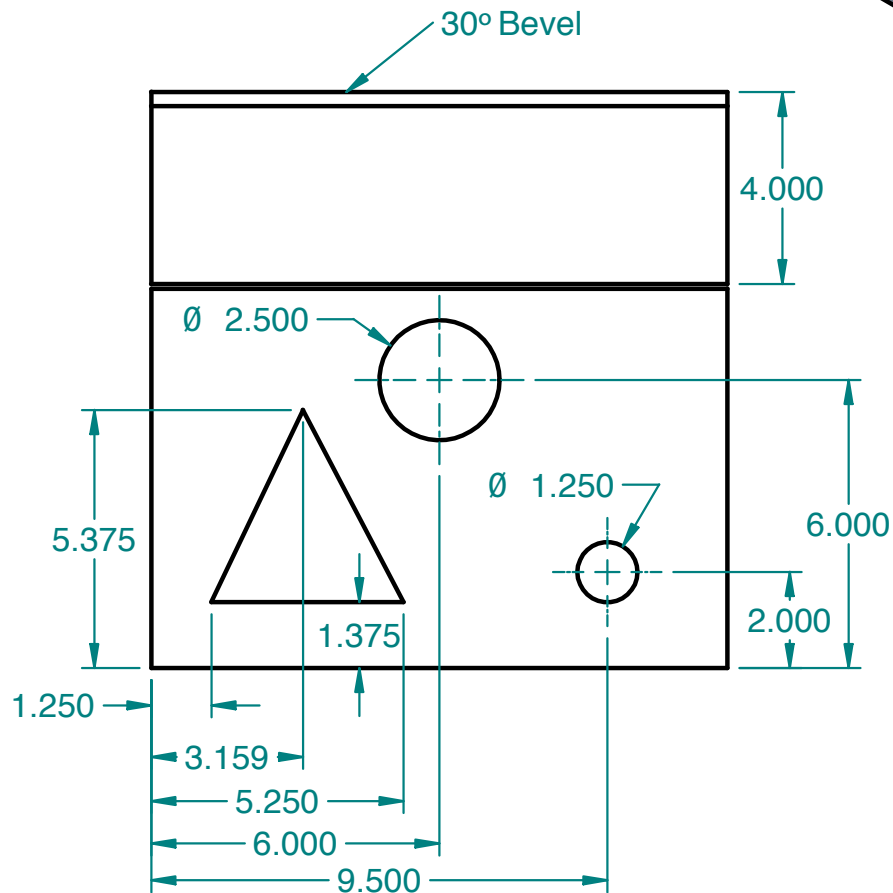
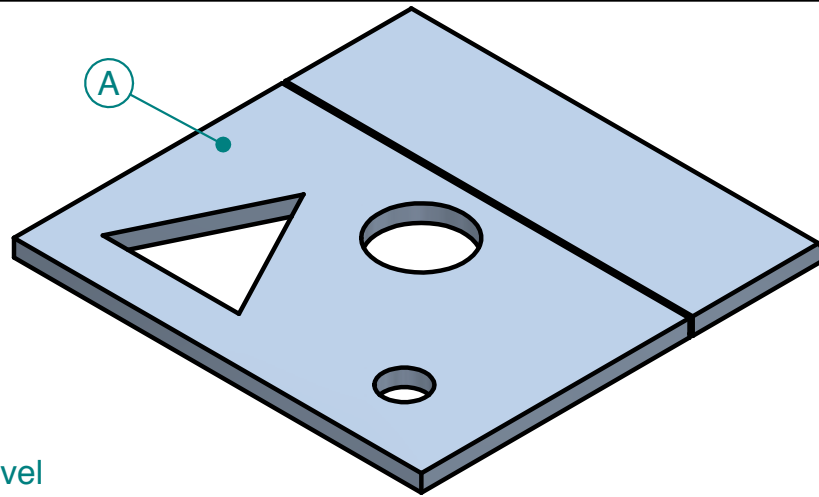
Figure 2 – Areas that the Scoring System Evaluates

Good Luck!

The goals of the SkillsUSA Welding Technical Committee are to operate an honest, fair, and rewarding contest. Everyone involved in managing this contest truly strives to make that happen in an effort to reward excellence among America's future welding workforce. We all wish you the best in the competition and in your welding careers!

Respectfully,

The National Welding SkillsUSA Technical Committee



ID	Qty	Title
A	1	1/2 x 12 x 12 Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. LAYOUT IN ANY POSITION

2. CUTTING TO BE COMPLETED WITH PLATE FLAT ON TABLE

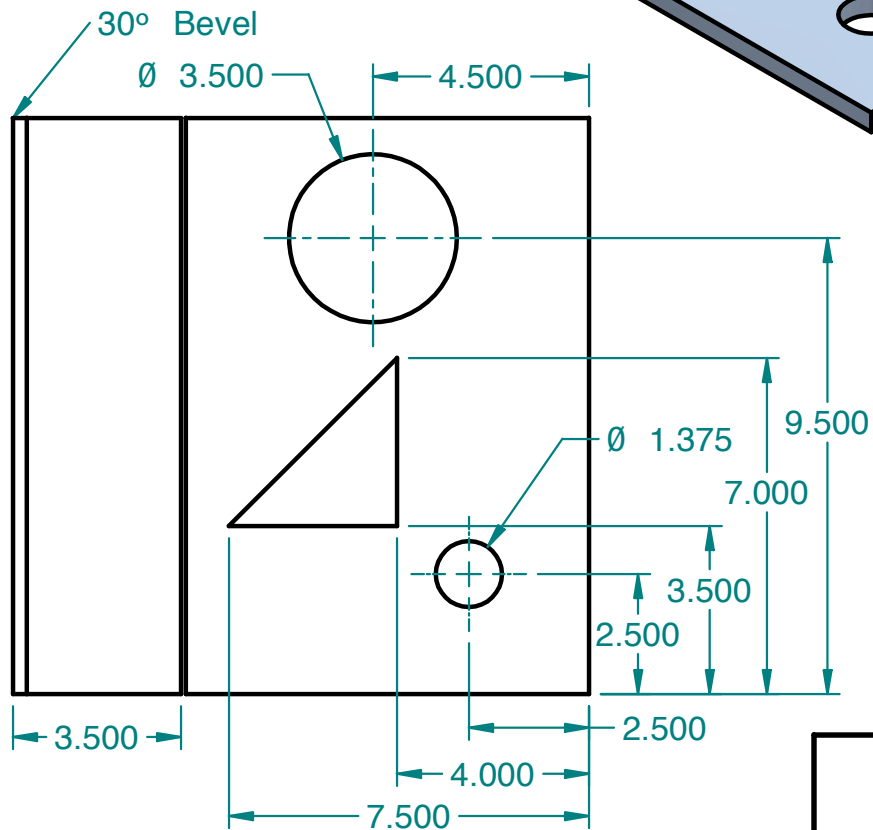
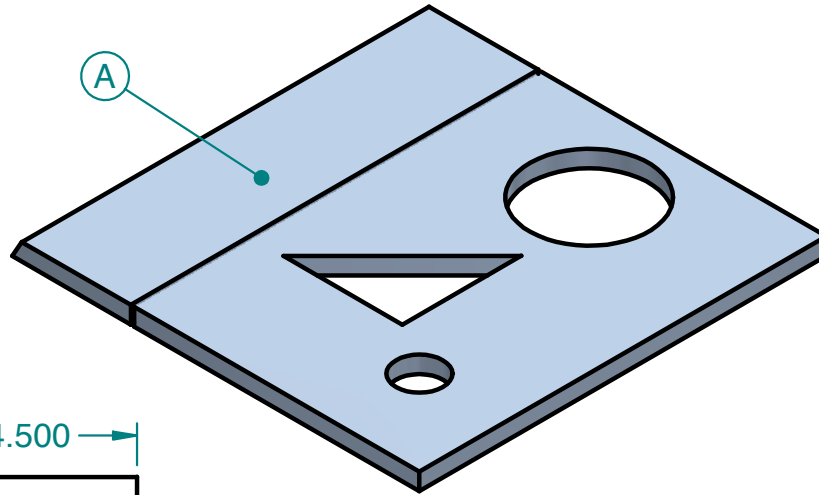


UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE
OFC College

SIZE A		
		SHEET 1 OF 1



ID	Qty	Title
A	1	0.5 x 12 x 12 Steel Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. LAYOUT IN ANY POSITION

2. CUTTING TO BE COMPLETED WITH PLATE FLAT ON TABLE

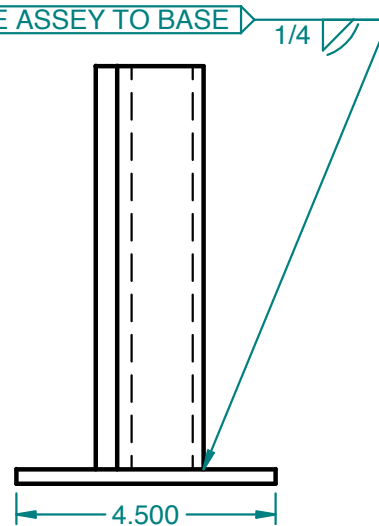
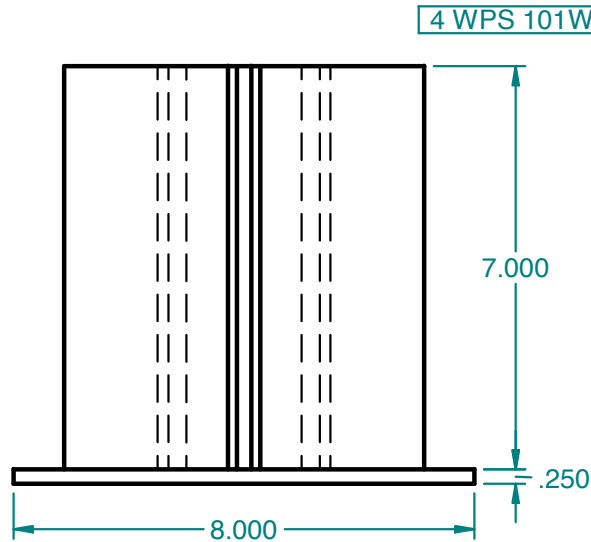
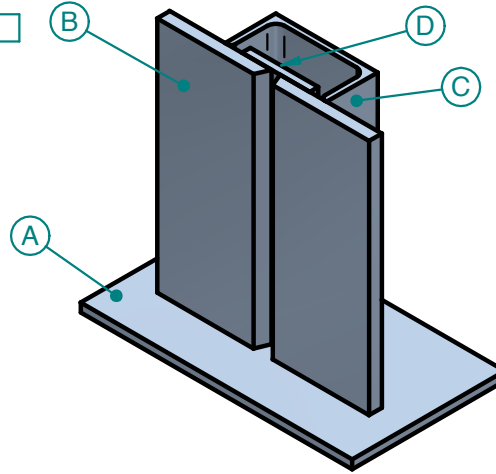
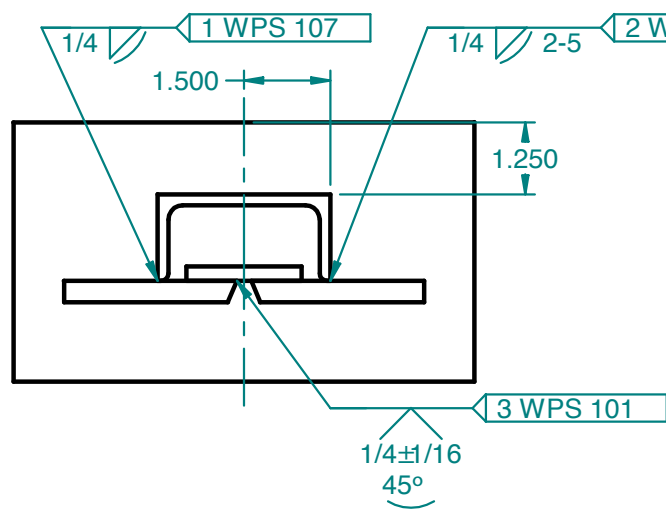


UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE OFC High School

SIZE A		
		SHEET 1 OF 1



ID	Qty.	Desc.
A	1	0.25 X 4.5 X 8 Steel Plate
B	2	3/8 x 7 x 3 22.5 Bevel One End
C	1	3 x 5.0# x 7 Steel Channel
D	1	0.25 x 2 x 7 Steel Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. TACK COMPLETE ASSEMBLY IN ANY POSITION

2. WELDING TO BE COMPLETED WITH THE GROOVE WELD IN THE 2G POSITION WITH PLATE A ON THE LEFT END OF THE GROOVE WELD JOINT.

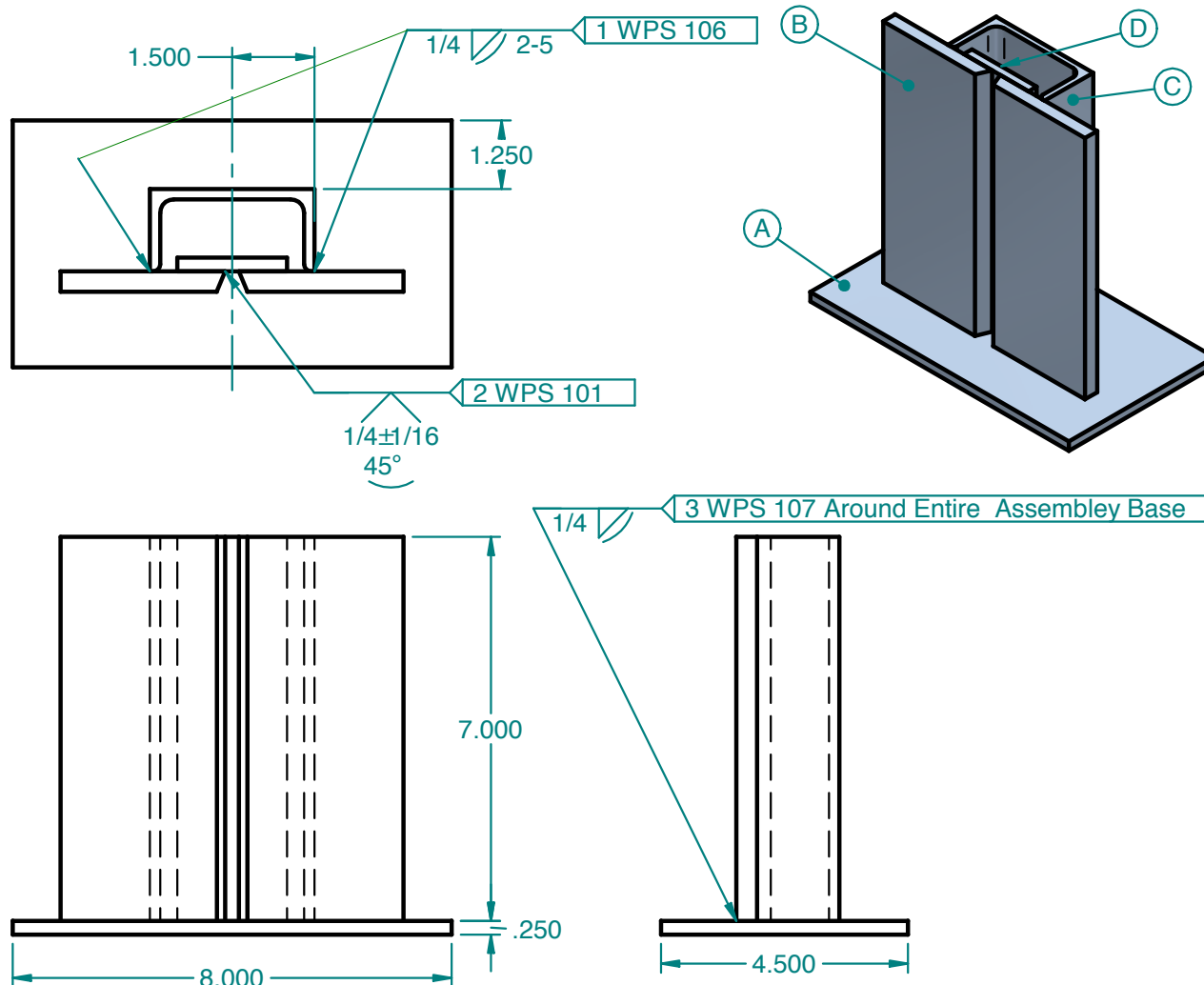


2015 National SkillsUSA Welding Contest

TITLE **SMAW College**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

SIZE A		
		SHEET 1 OF 1



ID	Qty.	Desc.
A	1	0.25 X 4.5 X 8 Steel Plate
B	2	3/8 x 7 x 3 22.5 Bevel One End
C	1	3 x 5.0# x 7 Steel Channel
D	1	0.25 x 2 x 7 Steel Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. TACK COMPLETE ASSEMBLY IN ANY POSITION

2. WELDING TO BE COMPLETED WITH THE GROOVE WELD IN THE 3G POSITION WITH PLATE A ON THE TABLE



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2015 National SkillsUSA
Welding Contest

TITLE
SMAW HIGH SCHOOL

SIZE
A

SHEET 1 OF 1

Welding Procedure Specification

WPS 101

[illegible]

Welding Procedure Specification

WPS 103[illegible]

Welding Procedure Specification

WPS 104

[illegible]

Welding Procedure Specification
WPS 106

WPS No. **WPS 106** Revision **2** Date **4/20/2012** By **NP**
 Authorized By **GH** Date **5/15/2011** Prequalified ☒
 Welding Process(es) **SMAW** Type: Manual ☒ Machine ☐ Semi-Auto ☐ Auto ☐
 Supporting PQR(s) **Prequalified**

JOINT

 Type **T-Joint**

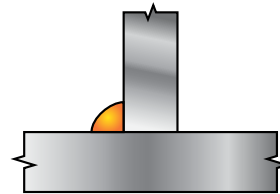
 Backing Yes ☐ No ☒ Single Weld ☒ Double Weld ☐

 Backing Material **N/A**

 Root Opening **N/A** Root Face Dimension **N/A**

 Groove Angle **N/A** Radius (J-U) **N/A**

 Back Gouge Yes ☐ No ☒

 Method **N/A**

BASE METALS

 Material Spec. **A-36** to **A-36**

Type or Grade to

 Thickness: Groove (in) **N/A** - **N/A**

 Fillet () **Unlimited** -

 Diameter (Pipe, in) **N/A** - **N/A**
POSITION

 Position of Groove Fillet **1F,2F,3F,4F**

 Vertical Progression: ☒ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

 Short-Circuiting ☐ Globular ☐ Spray ☐

 Current: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

 Other **N/A**

Tungsten Electrode (GTAW):

 Size **N/A** Type **N/A**
FILLER METALS

 AWS Specification **A5.1**

 AWS Classification **E-6010**
SHIELDING

 Flux Gas **N/A**
N/A Composition **N/A**

 Electrode-Flux (Class) Flow Rate **N/A**
N/A Gas Cup Size **N/A**
PREHEAT

 Preheat Temp., Min. **60 Deg.F**

 Thickness Up to 3/4" Temperature **N/A**

 Over 3/4" to 1-1/2" **N/A**

 Over 1-1/2" to 2-1/2" **N/A**

 Over 2-1/2" **N/A**

 Interpass Temp., Min. **N/A** Max. **N/A**
TECHNIQUE

 Stringer or Weave Bead **Both**

 Multi-pass or Single Pass (per side) **Multiple/Single**

 Number of Electrodes **1**

 Electrode Spacing: Longitudinal **N/A**

 Lateral **N/A**

 Angle **N/A**

 Contact Tube to Work Distance **N/A**

 Peening **N/A**

 Interpass Cleaning **Chip slag and wire brush**
POSTWELD HEAT TREATMENT

 PWHT Required ☐

 Temp. **N/A** Time **N/A**
WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	SMAW	E-6010	1/8	DCEP	90-115	N/A	4-10 ipm	

Welding Procedure Specification
WPS 107

WPS No. **WPS 107** Revision **2** Date **4/20/2012** By **NP**
 Authorized By **GH** Date **5/15/2011** Prequalified ☒
 Welding Process(es) **SMAW** Type: Manual ☒ Machine ☐ Semi-Auto ☐ Auto ☐
 Supporting PQR(s) **Prequalified**

JOINT

 Type **T-Joint**

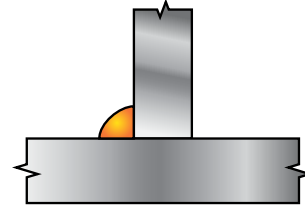
 Backing Yes ☐ No ☒ Single Weld ☒ Double Weld ☐

 Backing Material **N/A**

 Root Opening **N/A** Root Face Dimension **N/A**

 Groove Angle **N/A** Radius (J-U) **N/A**

 Back Gouge Yes ☐ No ☒

 Method **N/A**

BASE METALS

 Material Spec. **A-36** to **A-36**

Type or Grade to

 Thickness: Groove (in) **N/A** - **N/A**

 Fillet () **Unlimited**

 Diameter (Pipe, in) **N/A** - **N/A**
POSITION

 Position of Groove Fillet **1F,2F**

 Vertical Progression: ☐ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

 Short-Circuiting ☐ Globular ☐ Spray ☐

 Current: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

 Other **N/A**

Tungsten Electrode (GTAW):

 Size **N/A** Type **N/A**
FILLER METALS

 AWS Specification **A5.1**

 AWS Classification **E-7024**
SHIELDING

 Flux Gas **N/A**
N/A Composition **N/A**

 Electrode-Flux (Class) Flow Rate **N/A**
N/A Gas Cup Size **N/A**
PREHEAT

 Preheat Temp., Min. **60 Deg.F**

 Thickness Up to 3/4" Temperature **N/A**

 Over 3/4" to 1-1/2" **N/A**

 Over 1-1/2" to 2-1/2" **N/A**

 Over 2-1/2" **N/A**

 Interpass Temp., Min. **N/A** Max. **N/A**
TECHNIQUE

 Stringer or Weave Bead **Both**

 Multi-pass or Single Pass (per side) **Multiple/Single**

 Number of Electrodes **1**

 Electrode Spacing: Longitudinal **N/A**

 Lateral **N/A**

 Angle **N/A**

 Contact Tube to Work Distance **N/A**

 Peening **N/A**

 Interpass Cleaning **Chip slag and wire brush**
POSTWELD HEAT TREATMENT

 PWHT Required ☐

 Temp. **N/A** Time **N/A**
WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	SMAW	E-7024	1/8	DCEP	130-150	N/A	4-10 ipm	

Welding Procedure Specification
WPS 108

WPS No. **WPS 108** Revision **1** Date **5/04/2014** By **NP**
 Authorized By **EN** Date **5/04/2014** Prequalified ☒
 Welding Process(es) **FCAW-G** Type: Manual ☐ Machine ☐ Semi-Auto ☒ Auto ☐
 Supporting PQR(s) **Prequalified**

JOINT

 Type **T-Joint, Butt, Flanged**

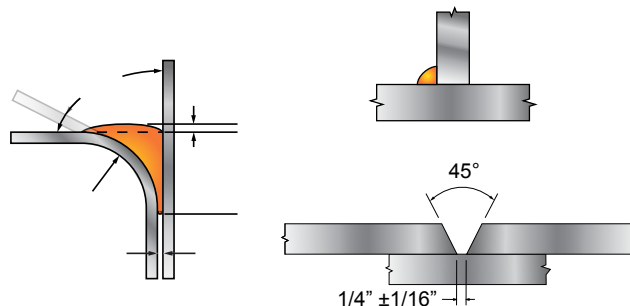
 Backing Yes ☐ No ☒ Single Weld ☒ Double Weld ☒

 Backing Material **N/A**

 Root Opening **0** Root Face Dimension **N/A**

 Groove Angle **N/A** Radius (J-U) **N/A**

 Back Gouge Yes ☐ No ☒

 Method **N/A**

BASE METALS

 Material Spec. **A-36** to **A-36**

Type or Grade to

 Thickness: Groove () **Unlimited** - **N/A**

 Fillet (in) **Unlimited** -

 Diameter (Pipe,) **N/A** - **N/A**
FILLER METALS

 AWS Specification **A5.20**

 AWS Classification **E71T-1**
SHIELDING

 Flux Gas **M20-ArC-10**
N/A Composition **90%Argon/10%CO2**

 Electrode-Flux (Class) Flow Rate **35-45 CFH**
N/A Gas Cup Size **1/2" - 3/4"**
PREHEAT

 Preheat Temp., Min. **60 Deg.F**

 Thickness Up to 3/4" Temperature **N/A**

 Over 3/4" to 1-1/2" **N/A**

 Over 1-1/2" to 2-1/2" **N/A**

 Over 2-1/2" **N/A**

 Interpass Temp., Min. **N/A** Max. **N/A**
POSITION

 Position of Groove **All** Fillet **All**

 Vertical Progression: ☒ Up ☐ Down

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

 Short-Circuiting ☐ Globular ☐ Spray ☐

 Current: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

 Other **N/A**

Tungsten Electrode (GTAW):

 Size **N/A** Type **N/A**
TECHNIQUE

 Stringer or Weave Bead **Both**

 Multi-pass or Single Pass (per side) **Multiple/Single**

 Number of Electrodes **1**

 Electrode Spacing: Longitudinal **N/A**

 Lateral **N/A**

 Angle **N/A**

 Contact Tube to Work Distance **1/2" to 3/4"**

 Peening **N/A**

 Interpass Cleaning **Chip slag and wire brush**
POSTWELD HEAT TREATMENT PWHT Required ☐

 Temp. **N/A** Time **N/A**
WELDING PROCEDURE

Layer/Pass	Process	Filler Metal Class	Diameter	Cur. Type	Amps	Volts	Travel Speed	Other Notes
All	FCAW-G	E71T-1M	0.045	DCEP	200-275	23-26	5-12	WFS:285-362 ipm
RECOMMENDED SETTINGS:								
1F&2F	FCAW-G	E71T-1M	0.045	DCEP	250	25	5-12	WFS:362ipm
4F	FCAW-G	E71T-1M	0.045	DCEP	225	24	5-12	WFS:327ipm
3F	FCAW-G	E71T-1M	0.045	DCEP	200	23	5-12	WFS:285ipm

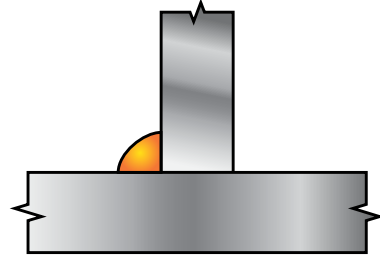
Welding Procedure Specification

WPS 110

WPS No. WPS 110 Revision 1 Date 06/04/2015 By NP
 Authorized By EN Date 6/04/2015 Prequalified ☒
 Welding Process(es) GMAW Type: Manual ☐ Machine ☐ Semi-Auto ☒ Auto ☐
 Supporting PQR(s) _____

JOINT

Type	T-Joint			
Backing	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Single Weld <input checked="" type="checkbox"/>	Double Weld <input checked="" type="checkbox"/>
Backing Material	N/A			
Root Opening	N/A		Root Face Dimension	N/A
Groove Angle	N/A		Radius (J-U)	N/A
Back Gouge	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		
Method	N/A			



BASE METALS

Material Spec.	A 36	to	A 36
Type or Grade		to	
Thickness: Groove () N/A	-	N/A
Fillet (in) Unlimited	-	
Diameter (Pipe,) N/A	-	N/A

FILLER METALS

AWS Specification	A5.18	
AWS Classification	ER70S-6	

SHIELDING

Flux	Gas	M20-ArC-10
N/A	Composition	90%Argon/10%CO2
Electrode-Flux (Class)	Flow Rate	35-45 CFH
N/A	Gas Cup Size	1/2" - 3/4"

PREHEAT

Preheat Temp., Min. 60 Deg.F	
Thickness Up to 3/4"	Temperature N/A
Over 3/4" to 1-1/2"	N/A
Over 1-1/2" to 2-1/2"	N/A
Over 2-1/2"	N/A
Interpass Temp., Min. N/A	Max. N/A

POSITION

Position of Groove	<u>N/A</u>	Fillet	<u>1F, 2F</u>
Vertical Progression:	<input type="checkbox"/> Up	<input type="checkbox"/> Down	

ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW):

Short-Circuiting ☐ Globular ☐ Spray ☒

Current: AC ☐ DCEP ☒ DCEN ☐ Pulsed ☐

Other **N/A**

Tungsten Electrode (GTAW):

Size **N/A** Type **N/A**

TECHNIQUE

Stringer or Weave Bead	<u>Stringer</u>
Multi-pass or Single Pass (per side)	<u>Multiple/Single</u>
Number of Electrodes	<u>1</u>
Electrode Spacing: Longitudinal	<u>N/A</u>
Lateral	<u>N/A</u>
Angle	<u>N/A</u>
Contact Tube to Work Distance	<u>5/8" to 3/4"</u>
Peening	<u>N/A</u>
Interpass Cleaning	<u>Chip slag and wire brush</u>

POSTWELD HEAT TREATMENT PWHT Required ☐

Temp. **N/A** Time **N/A**

WELDING PROCEDURE

[illegible]